इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

"जानने का अधिकार, जीने का अधिकार"
Mazdoor Kisan Shakti Sangathan
"The Right to Information, The Right to Live"

"पुराने को छोड नये के तरफ"
Jawaharlal Nehru
"Step Out From the Old to the New"

IS 13992 (1994): Bulk Handling Equipment - Bagging Machines (Electronic Type) - Design and Construction - General Requirements [MED 7: Material Handling Systems and Equipment]

"ज्ञान से एक नये भारत का निर्माण"
Satyanarayan Gangaram Pitroda
"Invent a New India Using Knowledge"

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS 13992 : 1994
(Reaffirmed 2004)

भारतीय मानक

राशि प्रहस्तन उपस्कन – बोरे भरने की मशीन (इलैक्ट्रॉनी किस्म) – डिजाइन और निर्माण – सामान्य अपेक्षाएं

Indian Standard

BULK HANDLING EQUIPMENT — BAGGING MACHINES (ELECTRONIC TYPE) — DESIGN AND CONSTRUCTION — GENERAL REQUIREMENTS

UDC 621·798·34

© BIS 1994

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1994

Price Group 2

Bulk Handling Systems and Equipment Sectional Committee, HMD 7

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on the recommendations of Bulk Handling Systems and Equipment Sectional Committee and approval of the Heavy Mechanical Engineering Division Council.

This Indian Standard covers the general requirements of electronic type bagging machines. The requirements laid down in the Indian Standard are not withstanding the requirements of any other Status, Regulations, Acts and Rules or any other Central or State Governments Orders issued from time to time which are otherwise to be met.

Electronic type bagging machines are taking the place of mechanical type bagging machines where feasible. This Indian Standard therefore, attempts to provide uniform guidelines to the purchaser and the supplier on the electronic type bagging machines. This standard covers a net-weigher type bagging machines (electronic) suitable for filling in open mouthed and/or valve type bags. Taring of bags is also possible as soon as the bag is put on the machine. The data sheet necessary for selection and design of these type of bagging machine have been laid down in IS 13945 : 1994 'Bulk handling equipment — Bagging machines (Electronic type) — Data sheet'.

The general requirements for design and construction of mechanical type bagging machine have been specified in IS 13989 : 1994 'Bulk handling equipment — Bagging machines (Mechanical type) — Design and construction — General requirements'.

In the preparation of this standard assistance has been derived from the following pulications issued by Organization Internationale De Metrologie Legale:

OIML C 8 Non-automatic weighing instruments

OIML R 60 Metrological Regulations for load cell

OIML R 61 Automatic gravimetric filling machines

OIML R 74 Electronic weighing instruments

OIML R 87 Net content in packages

Accuracy requirements have been specified in International Recommendation OIML R 61. Accuracies other than those specified in **4.6** may be adopted as per agreement between purchaser and the manufacturer.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

BULK HANDLING EQUIPMENT — BAGGING MACHINES (ELECTRONIC TYPE) — DESIGN AND CONSTRUCTION — GENERAL REQUIREMENTS

1 SCOPE

1.1 This standard covers the net-weighter type bagging machines (electronic) suitable for bulk solid materials.

1.2 The standard also covers details of the functions and the operating characteristics of the bagging machines (mechanical type). Any additional or alternate features may be as agreed to between the purchaser and the supplier.

1.3 This standard generally covers the bagging machines used in conjunction with machines directly mounted on the off-take conveyors. These machines may also be used with carousel type conveyors etc, operational details of which have to be specified by the purchaser.

2 REFERENCES

Indian Standard IS 13945 : 1994 Bulk Handling Equipment — Bagging machines (Electronic type) — Data sheet for specification is a necessary adjunct to this standard.

3 GENERAL REQUIREMENTS

3.1 Design, manufacture and supply of bagging machines shall meet the performance requirements as specified by the purchaser.

3.2 The bagging machines shall be suitable for the duty conditions as specified by the purchaser.

3.3 The purchaser shall provide the information to the manufacturer/supplier in accordance with IS 13992 : 1994.

4 DESIGN AND CONSTRUCTION

4.1 Bagging machine shall be electronic fully load cell/level load cell/beam load cell type as specified by the purchaser comprising fully automatic basic weighing functions, check weighing, correction unit and calibration.

4.2 Bagging machine shall be provided with either self optimising controller unit or microp-ocessor controller unit, both having provisions to hook up with a printer and data logger. The memory of the microprocessor based controller unit shall be battery backed up to save all programmed values in the event of a power failure.

4.3 Bagging machine along with its controller unit shall be capable to cope with changes in material properties such as density and fluidity and with dust build up on the weigh pan without any operator's intervention.

4.4 The variation in capacity of automatic weighing cycle of the machine shall be in suitable steps per hour.

4.5 The weight of each bag and capacity of bagging machine in bags per hour shall be clearly indicated by the purchaser in his enquiry/order [*see* IS 13945 : 1994] and by the manufacturer on the machine.

4.6 The accuracy of the bagging machine shall be ± 0.1 percent per weightment and — 0 percent for any 20 consecutive bags while weighing 50 kg/25 kg bags or as specified by the purchaser as per the relevant clauses of the Weights and Measures (Packaged Commodity) Act.

4.7 In case of feeder type machines, feeding of material to be weighed shall be done with variable speeds so as to achieve and maintain the sustained accuracy.

4.8 Bagging machine housing shall be of dust tight construction with doors as required. The dedusting connections shall be provided at pre-filling spout, weigh hopper, etc as the case may be depending on the product handled. The connections shall be suitable for the volume of air to be vented, the value of which shall be indicated by supplier.

4.9 The filling spout with bag clamping device shall be provided to securely hold the bags while the material is being discharged into the bag. The clamp closing and opening shall be controlled by a manual/switch operated device or as specified by the purchaser.

4.10 Following features of a control module shall be housed in control panel:

a) Weighment size selector
b) Automatic compensation for
  i) inflight material,
  ii) tare compensation; and
  iii) in suspension material
c) Automatic over/under checking (zero and full balance)
d) Automatic correction (zero and full balance)
e) Feed Mode selection

f) Dribble feed adjustment
g) Nett weight indicator
h) Fault indicator
j) Cumulative weight indicator
k) Manual release of residue material either through remote operation or otherwise
m) Release of burst bag

4.11 Materials of construction for each part of the machine shall be as specified by the purchaser. If not specified, manufacturer shall clearly indicate material of construction for each part of the machine.

4.12 The operation of bagging machine together with bag holder shall be entirely automatic, except for fixing the empty bags to bagging spout.

4.13 The operation of the pneumatic sack grip with clamp closure shall be by means of switch operable by the knuckle.

4.14 The operation of the machine shall be electro-pneumatic type with electronic control of weighing and self optimizing/microprocessor control of net weighment.

4.15 A manual switch shall be provided in control panel for discharging the residue material less than one weighment.

4.16 Controller Unit Requirements

Controller unit of bagging machine shall be provided with a printer and data logger if specified by the purchaser. Printer unit shall be capable of printing the following information as required by the purchaser:

a) Date
b) Time
c) Batch and serial number
d) Weight at each weighment (kg)
e) Total weight for each twenty consecutive weighment (kg)
f) Total weight per shift of bagging (t)
g) Total weight per day of bagging (t)
h) Total weight per month of bagging (t)
j) Total weight per year of bagging (t)

4.16.1 Compatibility of controller with purchaser's data logger shall be ensured if so agreed between purchaser and supplier

4.17 If specified in the data sheet or if the manufacturer feels necessary keeping in view the characteristics of the materials being handled, bagging machine shall be provided with a rotary agitator above inlet to break up any lumps or caking formed.

4.18 Air requirement for each bagging machine at desired parameter shall be indicated by the manufacturer.

4.19 Control panel shall be placed at such a distance from the machine as specified by the purchaser. Local control station shall be installed on suitable supports near machine, within the reach of the operator. If so desired by the purchaser, the complete control panel shall be installed locally.

4.20 Necessary interlocking circuitry shall be provided for anti double dumping to prevent two weighments being discharged in case the filled bag is left on spout for a period greater than the weighting time cycle.

4.21 For installation of machine in hazardous area, all electrical and instrumentation shall be suitable for the area classification specified by the purchaser.

5 OPERATION

5.1 The mode of operation of bagging machine normally is:

a) Clamping of bag on bagging spout — Manual
b) Discharge of material in the bag — Automatic
c) Residue material in the hopper — Manual
d) Filling cycle of machine — Automatic

5.2 It shall be ensured that no automatic discharge of material takes place unless the bag is clamped.

5.3 Initiating the cycle, for clamping the bag manually, if all the operations of filling right upto discharge of bag are automatic then the operation is termed as semi-automatic.

5.4 The operation of the bagging machine shall be such that the operator while lifting the empty bag for fixing to the filling spout shall simultaneously press with his knuckle the operating lever, after which all the following operations shall be automatic in their proper sequence:

1) Clamping of empty bag on filling spout.
2) Effecting discharge of pre-weighed material to the clamped bag.
3) Audio visual signal for readiness of machines, emergency stop and discharge of weighment.
4) Auto check weighing after:
   i) each bag
   ii) pre-set number of bags
   iii) pre-determined time interval
5) Auto compensation for weight correction after:
   i) each bag
   ii) pre-set number of bags
   iii) pre-determined time interval

6) Auto zero taring of machine after:
    i) Each bag
    ii) Pre-set number of bags
    iii) Pre-determined time interval

7) Provision of in-flight material correction.

8) Remote calibration of machine from control panel excluding load cell.

9) Adjustment (remote) from control panel
    i) Acceptable tolerance and dead zone
    ii) Coarse feed
    iii) Dribble feed

10) Display on remote control panel
    i) Set and actual tare weight
    ii) Set and actual net weight
    iii) Over weight
    iv) Under weight

11) Mode of display digital.

12) Fault and diagonetic indicator, provision on remote control panel.

13) Air failure safety.

14) Hook up with data logger and printer.

15) Closing the discharge gate of weighing receptacle and then starting filling in of fresh charge of material in the weighing receptacle.

16) Release of filled bag.

5.5 Arrangements shall be provided for remote manual release of residue material or material filled in a burst bag.

6 FUNCTION

6.0 As soon as a weighing cycle is initiated, material feed starts in a full flow rate until a preset weight is reached. Feed rate is then reduced and material starts dribbling till the preset weight is reached. After the preset weight has been collected in the hopper, the hopper doors open and discharge the material into the bag. The doors then close automatically and new cycle starts.

6.1 The entire weighing cycle is controlled and monitored by the control module on the basis of the present data and actual weight signal supplied by the load cells. In addition to the manual zero and full weight adjustments, the module—depending upon the options selected—shall automatically keep track of zero, preact and final cut off settings.

7 SUPPLY CONDITIONS

7.1 Supply for bagging machines shall include the following.

a) *Essential Components* — Bagging machine shall be complete in all respects and shall include but not be limited to the following essential items for each machine.

    i) Bagging machine with its accessories such as belt feeder or screw feeder or rotary feeder with two speed motor, reduction gear box, coupling, load cell, weighing hopper and enclosed casing.
    ii) Pneumatically operated bag holder with air cylinders and all controls etc, including air filter, lubricating arrangement, pressure reducer and pressure gauge (but excluding air compressor and air receiver) and suitable flexible length of air pipe with union to connect purchaser air pipe line. Purchaser shall supply air at one point only per machine.
    iii) Discharge spout.
    iv) Bagging spout.
    v) Counter weights, if required.
    vi) Bolts, nuts and gaskets as required for connecting inlet to the surge hopper.
    vii) Foundation bolts.
    viii) Machine supporting frame with suitable antivibration mounting.
    ix) Bag holder.
    x) All electrical and controls including motors, motor control centres, push buttons, lamps, etc.
    xi) Proximity switches, solenoid valve, local control box, central control panel, junction boxes with glands.
    xii) Interconnecting cables.

b) *Optional Items* — Bagging machine shall also be provided with following items which shall be optional and be supplied with the main equipment if purchaser specifies for the same in his order.

    i) Agitator with drive.
    ii) Microprocessor / self optimising controller unit.
    iii) Data logger with printer and UDC (one set for all the machines) mounted on a specially designed desk.
    iv) Redusting system.

8 DRAWINGS AND TECHNICAL DOCUMENTS

The complete technical specification, layout and sectional drawings including functional, operational and control features shall be furnished for the machine.

9 INSPECTION AND TESTING

9.1 The schedule of inspection and testing at manufacturer's works shall be as agreed to between the purchaser and the supplier.

9.2 The bagging machine shall operate satisfactorily without undue noise, vibration or display of any unfavourable characteristics.

9.3 For establishing the sustained capacity and accuracy of the bagging machine, a load test run at site under stabilized conditions for a minimum period of one hour at its rated capacity shall be conducted without any changes in setting of the machine.

10 PROTECTION AND PAINTING

10.1 The bagging machine, its sub-assemblies and other components shall be suitably painted. The machined parts shall be protected against rust with a rust preventing coating.

10.2 Unless otherwise specified by purchaser, all structural parts shall be thoroughly cleaned and painted with atleast two coats of paint after a coat of primer.

10.3 The bagging machine shall be properly packed so as to avoid any damage during transportation.

10.4 In case the sub-assemblies or the components have to be packed separately, they shall have suitable marking to match them with the related sub-assemblies or the components.

10.5 The bagging machine shall have identification plate showing:

a) Manufacturer's name,
b) Serial number and year of manufacture,
c) Capacity, and
d) Any other particular data as specified by purchaser.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition.

This Indian Standard has been developed from Doc : No. HMD 07 (5271)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices:		Telephone
Central :	Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	331 01 31 331 13 75
Eastern :	1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	37 84 99, 37 85 61 37 86 26, 37 86 62
Northern :	SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43, 53 16 40 53 23 84
Southern :	C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
Western :	Manakalaya, E9 MIDC, Marol, Andheri (East) BOMBAY 400093	632 92 95, 632 78 58 632 78 91, 632 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. PATNA. THIRUVANANTHAPURAM.

Printed at Printrade, New Delhi, India